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Preface

Our contributors to this third volume are Ion Banu, Professor of Philosophy at the University of Bucharest. Banu was born in 1913 and is presently also Member of the Academy of Social Sciences. His special interest is in the history of philosophy. Some of his books are: The First Greek Materialists (1950); Introduction to the History of Philosophy (1957); Heraclitus of Ephesus (1963); and his prize-winning (Prize of the Ministry of Education, 1967) Universal Senses and Specific Differences in the Philosophy of the Ancient Orient. Dr. Karel Berka (b. 1923) studied philosophy and linguistics at Brno University, subsequently receiving the Ph.D. and CSc from Olomouc and Charles universities. Professor Berka has taught logic, its history, and the philosophy of science at Charles University (Prague), Karl Marx University (Leipzig), and Pennsylvania State University (University Park). His main works are devoted to the history of logic (Propositional Logic in Antiquity; Aristotle; The Origins of Logic) and to the philosophy of logic (What is Logic?). Professor George Brutian of the Yerevan State University was born in 1926 in the Armenian SSR. His interests lie in the philosophy of language, in logic, and in the theory of knowledge. He has published about eighty monographs and articles, which have appeared throughout the world. Dr. Brutian recently visited the United States, giving a lecture tour on logic and language. Georg Lukács (born 1885) is one of the giants of European letters and philosophy. He is presently completing his work on aesthetics. His works include: Der junge Hegel (1948); Existentialismus oder Marxismus? (1951); and Die Zerstörung der Vernunft (1955). Bogusław Wolniewicz is presently Head of the Section of Philosophy in the Institute of Philosophy of the University of Warsaw. Dr. Wolniewicz (b. 1927) was in 1967 Visiting Associate Professor at the University of Chicago. He is the author of Things and Facts: An Introduction to Wittgenstein's First Philosophy (Polish, 1968).

The contributors' essays comprise the remaining articles of the third chapter and the first essay of chapter four. The index for the first four volumes will be included in volume IV.

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Karel Berka

"Toward a Materialistic Foundation of Logic"*

In this paper we shall make an attempt to develop a materialistic standpoint in the philosophical foundation of logic, directed against Empiricism, Conventionalism, and Rationalism, on the one hand, and against Nominalism and Platonism, on the other. Our analysis, starting from a conception of logic implicitly present or explicitly accepted by the majority of logicians[1] will be developed in three steps, including (a) quasi-ontological presuppositions or prelogical (in case the term "ontology" would evoke misleading associations to some), (b) semantical assumptions and (c) an analysis of the concept of "existence."

The basic ideas of Materialism relevant for our purpose, especially the assertion of the priority of objective reality, are further developed in this specialized domain by adopting a "methological materialistic dualism", consisting in the acceptance not only of a real world, but also of a world of ideas, the latter being the result of the practical and theoretical activites of mankind. This explicit extension seems necessary to us if the specific status of logic is to be adequately characterized, and if the usual claims of different idealistic interpretations of logic (which still prevail) are to be challenged. Some

* Reprinted by permission of the author. Dr. Berka's article originally appeared in the Czech journal Teorie a Metoda, 1969. Article abridged for inclusion in this volume.

misunderstandings which might perhaps arise in this respect are due mainly to the traditional gap between logic, historically closely connected with Rationalism, and materialistic philosophy, focused primarily on the problems of the natural and social sciences.

On the philosophical level, the principal task of any satisfactory foundation of logic consists in an analysis of the relation of logic to experience and reality. What has always been conceived as an alleged paradox when dealing with logic, especially by empirically minded men, has been the contrast between the grounding of empirical knowledge by experience and the grounding of logic by itself. The logically valid propositional forms are valid simply by their form, without having to be tested by human experience. Why is deductive logic certain, whereas all other branches of science (with the exception of pure mathematics) yield no more than probable results? To this question several answers have been given.

From the philosophical standpoint of Empiricism, considered broadly, logical knowledge is nothing but a result of induction, and it differs from other kinds only by its more abstract nature. For Conventionalism, often combined with Subjective Idealism, the validity of logic is determined by linguistic conventions. From the standpoint of Rationalism, which is adopted in principle by Objective Idealists, the necessity of logic is given <u>a priori</u> or simply postulated (or it is felt to be an expression of the human mind's creativity).

All these explanations are undoubtedly one-sided. It must be maintained against Conventionalism, which

played an important role in the philosophical conceptions of the Vienna Circle, that the L-constants (being the basis of the definition of L-following and hence also the fundament of logical proof, deducibility, or derivability of logical syntax) are not selected arbitrarily as linguistic conventions. We cannot presume that logic is wholly independent of experience and reality. It has an empirical basis, but not in the sense assumed by empiricists. All branches of science are primarily rooted in reality. Scientific activities and the results of science are at the very beginning conditioned by the reality reflected in our experience. From this obvious fact, which is sometimes briefly characterized by the dictum "nature is prior to man", it does not follow that in this simple form the genetic materialistic monism is eo ipso fully adequate as an explanation of the peculiarities of logic. To maintain such an attitude would mean that in any possible case only experience is relevant to science, and that theory plays but an advisory part, or that everything must be ultimately checked by experience. In connection with the manifold activities of man as zoon politicon, backed by the evolution of his linguistic habits, his capacities of theorizing have grown in such a manner that the formerly immediate dependence of all his activities on reality has lost its compulsory character in certain domains. At a certain period of human history, a special, relatively independent "world of ideas" has emerged. The acceptance of this "reality" does not imply any Platonic world of ideas. The real world is one. Methodologically however, these two "worlds", the real world and the "world of ideas", are fixed by language; these two are indispensable

for any reasonable explanation of the theoretical sciences. Thus we have the conception of a genetic materialistic monism, reflecting the priority of nature, supplemented by a methodological materialistic dualism which takes into account the creativity of human activities. The assumption of these two "worlds", which Empiricism ignores and its opponents misinterpret, is a necessary condition for any understanding of the origin, development, and special status of formal logic as a science.

Against Empiricism we must argue with emphasis that its conception of the process of abstraction is a faulty simplification, one which cannot explain the special nature of logical constants. The definition of L-constants cannot be conceived as simple collections of our experiences gained by the observation of the linguistic habits of men. Logic as any other science adopts various, historically determined empirical concepts, but this process is not a passive transposition of experience into theory. Every theoretical concept with the exception of primitive terms must be defined within the framework of a science. Any theory is thus connected with the formation of new concepts, relativized to the conceptual network of the theory in question. In logic, a formal science, the difference between empirical and theoretical concepts is evidently stronger than in any other factual science. This might be understood without any further specification as a clear expression of Conventionalism or Objective Idealism. If we stress only the creativity of concept-formation and disregard its empirical basis, we adopt this standpoint, ultimately yielding the conclusion that logical constants are no more than useful conventions.

As in any other theoretical science, concept-formation in logic has more or less the character of idealization, which is (as commonly agreed) an indispensable tool of theory construction. Only if we misinterpret the process of idealization, which in different sciences admits different gradations, could one argue that we are defending a concealed conventionalistic standpoint. If we admit, however, idealization only in connection with its empirical basis, we reflect the actual practice of science. The relation of idealized concepts to empirical ones may not be factually traceable in every concrete case. It is only necessary to admit this possibility, because otherwise it would be impossible to explain the applicability of logic in both pure and applied science.

After this critical account of Empiricism and Conventionalism as the extremes of possible philosophic attitudes to logic, we may approach the more important questions which lead to the core of our inquiry. If we take into account the historical development of logic, its present systemization and its philosophical basis, it becomes clear that this relation must be understood in two senses, i.e., as an immediate and as a mediated relation. The available historical material shows clearly that the beginnings of logic are connected chiefly with the evolution of science and with an analysis of linguistic problems. The reflection of factual relations in reality is mediated through linguistically fixed thoughts. The analysis and codification of different kinds of reasoning, depending on propositions materially related to manifold facts, cannot but take into account the formal aspects. The relation of logic to reality is mediated through language. This fact, already manifest in the Stoic and

Medieval logics, is a special, characteristic feature of modern logic. We can, of course, speak of an immediate relation of logic to reality if we ask what corresponds to logical constants in reality. This immediate relation is historically secondary, it does not characterize the trends of the evolution of logic. Yet if we attempt to find a satisfactory grounding of logic, it plays an important role.

From the very beginning, an analysis of the immediate relation of logic to reality in modern theoretical discussions was connected with the renewal of the problem of universals in logic and mathematics.[2] Modern controversies between Platonism and Nominalism deal with different problems, e.g., the problems of the existence of logical and mathematical entities, infinity, etc. With regard to our problem we are interested only in the question of ontological commitments concerning the relation of logic to reality and its theoretical reflection.[3] These questions are accepted by most logicians as reasonable, even if they are answered in a "neutral manner", as by R. Carnap.[4] They are contained for the first time in Aristotle's conception of logic. In latter developments of logic formerly firm connections between logic and the science of being were successively untied in favor of the connection of logic with language. From this historically and systematically conditioned divorce of logic from ontology (regretted in vain by the adherents of traditional logic and philosophy), it does not follow that logic is independent of ontology, in the sense that it has no relation to reality. That logic has no relation to reality was held not only by the Vienna Circle (as an expression of their "anti-metaphysical" attitude), but also by working logicians, especially in the purely

syntactic period of modern logic. After the well-known results of K. Gödel, which destroyed all hopes of realizing Hilbert's programme, and of A. Tarski in the field of semantics; it was felt that logic cannot disregard the old philosophical controversies, but must handle them in a new way.

The necessity of establishing the range of admissible variables not only syntactically, but also semantically, led this time to considerations concerned with a categorization of their values. The categorization of entities designated or denoted by the variables of the language used in logic or mathematics was in a certain sense already established by Russell's theory of types. This syntactically oriented theory was at first introduced only ad hoc, in order to eliminate the logical paradoxes which arose in set theory and modern logic. With the semantical interpretation of the theory of types, it became clear that the hierarchy of entities established by it is in fact a quite natural categorization of designations, which could or rather had to be introduced even though this had not been the original intension of B. Russell. The theory of types, in a certain sense anticipated by Aristotle's doctrine of categories, was therefore the first attempt to give a systematic basis for the language of logic. Now, if we take a further step and raise the question why the theory of types is adequate to the present purposes of logic, we evidently require a philosophical claim. This holds also for a semantical reinterpretation of the theory, as was attempted by Leśniewski.

In this situation, the older controversies in the philosophy of logic were replaced by the controversy between Platonism and Nominalism. Both participants

in this controversy, in spite of irreconcilable standpoints, agree that a categorization of the entities designated or denoted by variables is a necessary assumption for any foundation of logic. The Nominalism in logic and mathematics represented by N. Goodman, W. V. Quine, and R. M. Martin, renounces abstract entities - classes, relations, properties, etc. The Platonism, represented by A. Church and H. Scholz admits all kinds of abstract entities, and in its extreme form considers them like Platonic Ideas. The dispute between Nominalism and Platonism with regard to the so-called ontological problem is nowadays discussed on the basis of Quine's formulation of ontological commitments. According to this criterion, which was in principle admitted also by A. Church,[5] it depends on "the value of the variables and not on the supposed designata of the constant terms that the ontology of a theory is to be sought."[6]

A language which admits variables that imply abstract entities as their values, e.g. classes, relations, etc., is considered as Platonistic; whereas a language which does not admit such variables is considered as nominalistic. As existentially quantifiable free variables such a language admits only individual variables. In the use of variables the Platonistic languages are unrestricted, provided that the theory of types is strictly adhered to.

If we accept this dichotomy and terminology the usual languages of logic and mathematics are Platonistic languages. The nominalistic philosopher of logic, who rejects the existence of abstract entities for philosophical reasons, is now facing a very difficult task if he wants to convince in a concrete fashion his philosophical opponents (or his neutrally minded colleagues

among working logicians and mathematicians). He must prove that a nominalistic language can serve equally well all the needs of logic and mathematics. He therefore attempts a nominalistic reinterpretation of these languages. Since according to the criterion of ontological commitments in a nominalistic language only individual variables may have a designative function, he must try to reinterpret all predicates as syncategorematic terms, i.e., as expressions that have no independent meaning, and to reduce all proper names and definite descriptions to propositional forms with quantified individual variables.

We must here disclaim a deeper analysis of the absurd consequences of this reductionism and shall mention but two features of this project, the failure of which had to be admitted by Goodman and Quine themselves. We think that Nominalism fails to discern sufficiently sharply semantical and ontological decisions. From the reinterpretation of the language, no conclusions can be drawn in regard to an attempted philosophical foundation of a science. An elimination of certain linguistic expressions does not eliminate the denoted or designated entities.

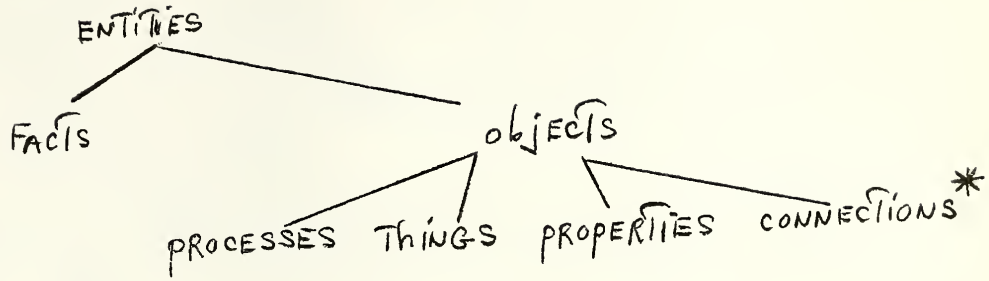
Secondly, the argument of nominalists to the effect that, a philosophical problem can be solved on the level of language by semantic means, has most undesirable consequences. If we accept the dichotomy between nominalistic and Platonistic languages, it follows that, because the nominalistic reinterpretation of Platonistic language failed (every scientific language with the languages of logic or mathematics as its framework must be a Platonistic language), every scientist is consciously or unconsciously bound to be a Platonist. We take for granted, however, that

whether somebody declares himself a Platonist or nominalist, depends on personal philosophical beliefs, and not on the language he uses. From a language (its syntax and semantics) one cannot draw convincing conclusions about ontological questions. Ontological decisions, whether explicitly or implicitly formulated, are prior to semantical decisions and are a necessary part of the philosophical foundations of any science.

The result of this criticism is that we refuse to accept the dichotomy "Nominalism-Platonism," considering that it leads to the conclusion that we must accept the Platonic solution. For an empiricist or materialist, Platonism as a philosophical conception, whether in its extreme or moderate form, is unacceptable.

It seems to us possible to find an appropriate philosophical foundation for logic that overcomes the horns of the dilemma, "Nominalism-Platonism," and equally avoids redundant philosophical presuppositions which could stir up emotional feelings unacceptable for scientists with different philosophical beliefs. The suggested conception will admit only minimal philosophical assumptions.

The philosophical foundations of logic will be found in a substantiated classification of semantical (and hence of syntactical) categories of the language of the formal sciences, based on a categorization of corresponding entities. This categorization will be called quasi-ontology or prelogic, in order to show its similarity and dissimilarity to traditional ontology. We develop this quasi-ontology on two levels. The quasi-ontology of the first level can be summarized by diagram 1:



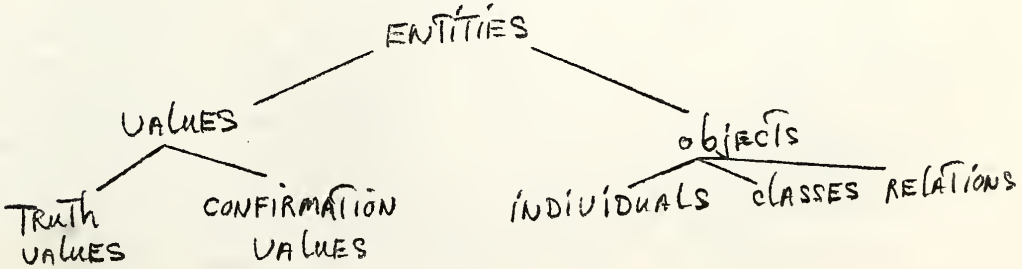
The quasi-ontology of the first level is based on the priority of reality, as well as on the assumption of the relative independence of the first member of the object-subject relation in the theory of knowledge.

* Used for terminological reasons in order to differentiate as in German between "Beziehung" and "Relation," or as in Czech, between "vztah" and "relace." See our paper "Logik und 'Ontologie': Kritische Bemerkung zum zeitgenössischen Universalienstreit," DZfPh 7/1967.

It assumes as real, i.e., existing in time and space, the following entities: facts, processes, things, properties and connections. Being interested only in the categorization of entities, we do not pay attention to the problem of an actual distinction of them. For our purpose it is thus irrelevant to ask, e.g. "What makes a thing a thing?"

Our categorization of objects is in fact broader than is needed in contemporary logic. Since it is possible to admit not only things but also processes, we can speak of two different quasi-ontologies of the first level--a discrete and continuous one. Contemporary logic is based on a discrete quasi-ontology. The question whether it would be possible to develop, on the basis of a continuous quasi-ontology, another form of logic, e.g., a logic of processes, of actions, is quite reasonable; and one can find at present several serious attempts in this direction.

The quasi-ontology of the second level can be characterized by diagram 2:



Whereas the entities of the quasi-ontology of the first level are objectively given, those of the quasi-ontology of the second level are postulated. These entities are idealized results of human activities. From a comparison of these two diagrams the following correspondences are manifest: Facts-values, things-individuals, properties-classes, connections-relations.

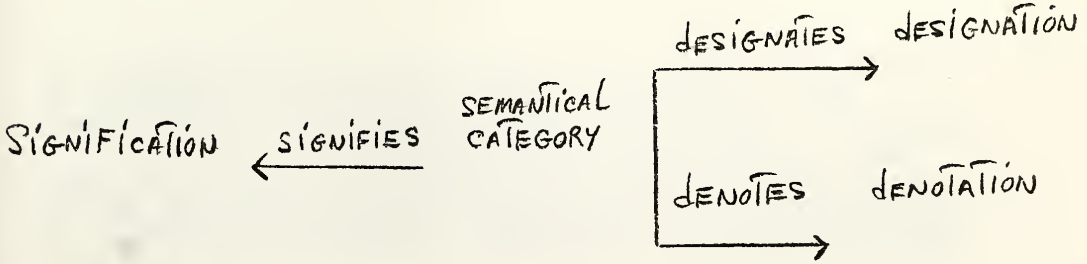
From these two quasi-ontologies it follows that the hierarchy of entities of the theory of types (which is basically unlimited) is admitted only for the quasi-ontology of the second level. The logic dealing with idealized entities is immediately related to the entities of the quasi-ontology of the second level. But as these entities (being ideal constructions) are not constructed independently of entities of the quasi-ontology of the first level, logic stands in a mediated relationship to reality. Our quasi-ontologies are at the same time an expression of methodological materialistic dualism by assuming two worlds--the real world and the world of ideas.

From both categorizations, which show clearly the dependence of the quasi-ontology of the second level on the quasi-ontology of the first level, there follows as well our stand on the controversy between Platonism and Nominalism. The acceptance of the quasi-ontology of the first level implies immediately a rejection of Nominalism by accepting not only a "world of individuals" in the sense of N. Goodman, but also a world with properties and connections. Platonism is stronger. We cannot reject it on the basis of our quasi-ontologies. This becomes possible only if we develop a modified conception of semantics based on our quasi-ontologies, and examine the problem of existence in logic.

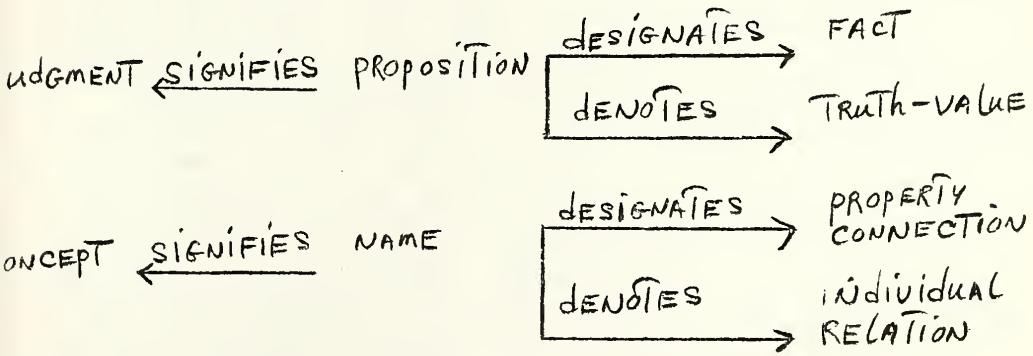
Logical semantics in modern logic was founded by

G. Frege's[7] conception, characterized by his well-known distinction of Sinn and Bedeutung. G. Frege has developed what might be called a two-dimensional semantics: a name expresses (drückt aus) its sense (Sinn) and denotes or means (bezeichnet, bedeutet) its meaning (Bedeutung). In this two-dimensional semantics, as I shall argue, two basically different semantical functions are identified, namely the function of bezeichnen and bedeuten. In respect to the special function of classical (two-valued extensional) logic, this identification seems quite appropriate. For our purposes, especially if we are interested in the problem of the relation of logic to reality and try to avoid a Platonic solution (explicitly involved in Frege's conception), a revision of this two-dimensional semantics is necessary. We shall propose a three-dimensional semantics, which presupposes the quasi-ontologies of both levels.[8]

This three-dimensional semantics which accepts as primary semantical categories the categories of "name" and "proposition," can be in either case characterized by diagram 3:



with three semantical functions: the signification-, designation-, and denotation-function. The aim of this revision lies in the differentiation of the designation- and denotation-function in respect to our quasi-ontologies: the designation-function is related to the quasi-ontology of the first level, and the denotation-function to the quasi-ontology of the second level. This becomes manifest from a concretization of the above-mentioned diagram:



This refined distinction makes clear the real process of abstraction, combined with idealizations and constructions, a systematic classification of variables in respect to corresponding ranges of values. The range of values of variables is primarily determined by the designations and secondarily by the denotations. It would be advisable to change the usual terminology

and speak either of variables in regard to the designations or denotations, but this would be too pedantic.* What is more important is an elucidation of the abstract step from fact to truth-values, without accepting the Platonistic interpretation of truth-values as abstract entities. It also becomes evident that logic cannot work with fact-variables and is therefore compelled to substitute denotations, i.e., values, for the designations or propositions. It is true that in the case of names this substitution is not necessary, but this does not in principle weaken the conception that logic is only mediately connected with the quasi-ontology of the first level.

The third step in the proposed philosophical foundation of logic (the problem of existence) deserves a somewhat broader introduction. It may, however, suffice to point out some fundamental remarks. This controversial problem, philosophically influenced by the refutation of the traditional existence-proofs of God, has been studied, first of all in respect to its formal expression, as reflected by the introduction of the existential quantifier, and by the interpretation of propositions involving existence in such a manner that the very structure of these propositions clearly shows that existence is not a predicate. This can also be found in natural languages, especially in English, when we compare, e.g., the following pair of expressions "There are negative numbers" and "Negative numbers are". The interest of logicians and philosophers has further concentrated on questions involving different

* A reclassification of variables could serve in any case for a distinction of different kinds of logical languages, a terminological precization and an elucidation of the concept of extension and intension in logic.

kinds of existence, and on the explanation of the concept of existence in connection with a distinction between what exists and does not exist, and how something exists or does not. These subject-matters became urgent especially in mathematics, where the available means of exhibiting the entities which are asserted as existent are evidently different from other sciences, e.g., in zoology.

These questions were systematically analyzed for the first time by G. Frege and B. Russell, who being the chief advocates of Logicism, identified mathematical and logical existence. Because their logical systems were constructed with the intention to serve only the needs of mathematics, the concept of logical existence became a paradigm for all other kinds. In another regard this solution was strengthened by the Formalism of D. Hilbert, who explicitly and with consistency identified logical and mathematical existence. Against this simplification of mathematical existence was directed the criticism of the intuitionists, who refused to accept the admissibility of the existential import of propositions referring to infinite domains. The intuitionists suggest another interpretation based on the identification of mathematical existence with construction or constructibility. The controversy whether to accept the identification of mathematical existence with consistency or constructibility has not yet been decided in favor of the one or the other opposing conception. The claims of logicists and formalists cannot be considered as adequate, because they imply an identification of two domains--namely logic and mathematics--which are methodologically very near, but substantially different. Neither can the claims of intuitionists be accepted, considering that (in so far as classical mathematics is concerned) they

imply the existence only of entities of finite domains. The requirement of actual constructions, which is the core of their intention, cannot be realized for the objects of infinite domains. If we agree that mathematical entities are entities gained by idealization, construction, and abstraction; we must nevertheless differentiate whether we are concerned with entities of finite or infinite domains. For finite domains an actual exhibition is possible, but for infinite domains it is not possible.

For the present purpose the special aspects of mathematical existence are less important, and it may suffice to say that for the existence of different mathematical entities we would like to propose different explications; actual constructions, i.e., constructions in a stronger sense, or finite entities a construction in a weaker sense, including the axiomatic method and the theory of models of infinite entities. This liberal attitude expresses our conviction that, for the entities of a certain science, we cannot formulate but one criterion of existence.

What seems to be more important is, first of all, a clear differentiation between logical existence (L-existence) on one hand and different kinds of factual existence (F-existence) on the other, or between logical, ideal and factual existence. L-existence can be in fact identified with consistency. For logic all entities exist which are subjected to the principium contradictionis. In this sense logic, or more explicitly classical elementary logic, can be applied in all "possible worlds" (in the sense of Leibniz), or, as we would say nowadays, in all the domains of individuals. These domains are in principle non-empty, because the assumption of logical existence rules out all internally

inconsistent entities. From the standpoint of L-existence only the impossible world is empty, and cannot therefore contain any entities.

Besides L-existence we can distinguish different kinds of F-existence (in a broad sense), if we want to underline the difference between consistency and special criteria of existence in all other cases than in the case of L-existence. However, another refined classification of non-logical or F-existence is also possible. First of all, we can speak of F-existence (in a narrow sense) and ideal existence, including (as the most distinguished case) mathematical existence. Secondly, we can further subclassify in accordance with different strata of reality.

From this standpoint we cannot consider as convincing the famous argument about the non-existence of Pegasus, centaurs, and so on. When we speak of the alleged non-existence, then we have in mind entities of domains described by zoology, or entities having some kind of F-existence. If we have in mind another context, namely the framework of Greek mythology, i.e., some kind of ideal existence, we cannot deny that they are non-existent. Without reference to a definite domain of entities, there is no point in speaking about existence or non-existence. This relativization does not only hold in such extreme, often artificially selected, cases, but also in regard to entities which are commonly accepted as existent. To speak about the existence of a neutron in the system of classical physics is to speak about a non-existent entity. This attempted classification of existence, methodologically related to a conception or relative existence, stands in clear opposition to all concepts of existence absolutely conceived by metaphysicians.

In practice the relativization of existence is connected with different criteria for establishing whether something exists or does not. As is already known, for L-existence we have assumed consistency, for physical existence one can adopt subsistence in time and space. For these reasons all disputes about whether something exists or not are simply idle, when a corresponding framework is undetermined.

As presumably already recognized, this standpoint is partially influenced by Carnap's distinction of internal and external existential questions and statements. We are similarly interested only in the existence of entities relative to a fixed domain. This holds also in the case of our quasi-ontologies. When the existence of facts and/or of truth values, of things, of individuals, etc., is assumed, only their relative existence in respect to these quasi-ontologies as forming their framework is meant as well in regard to other entities of each of them. We do not postulate that there exist, e.g., things as such, but only assume that there are things, without being concerned with their special nature. It is, of course, quite clear that in reality there are only specific things, not things in general. The relativization of entities is determined also by their mutual relations: the existence of one entity influences the existence or non-existence of another. We cannot speak of an existing thing without assuming that it has certain properties and is devoid of others. The acceptance of the suggested stratification of reality, reflected in the quasi-ontology of the first level, being at the same time the basis of a further stratification related to those ofthe quasi-ontology of the second level, has no intended metaphysical implications.

We neither make the attempt to reduce the proposed entities nor do we try to explain, e.g., what makes a thing a thing.

What conclusions can be drawn from the above-mentioned analysis of existence for the criticism of Nominalism and Platonism in logic? The existence of the entities of the quasi-ontology of the first level must be evidently understood as factual (in a broad sense), relativized in respect to different sub-classifications. The conception of the quasi-ontology of the first level is, of course, an idealization, needed for our philosophical grounding of logic. The existence of the entities of the quasi-ontology of the second level can be characterized as ideal existence. Truth-values, individuals, classes, and so on, are idealized entities and their existence is clearly distinct from the entities of the quasi-ontology of the first level.

The question whether there are, e.g., classes or not, if formulated in this way, is inexact, and cannot therefore be unambiguously answered. We can only ask whether they are or are not factual or ideal. In the former case our answer will be negative, in the later case positive. Because ideal existence is without any doubt different from the factual, we cannot assign to the entities of the quasi-ontology of the second level temporal and spatial coordinates. The often raised question "And how do ideal entities exist?", with the implicit allusion to the answer, "They exist <u>in</u> our minds" is only an expression of an anthropomorphic analogy with the existence of physical entities <u>in</u> time and space. To interpret entities with ideal existence as independent objects <u>sui generis</u> is tantamount to misinterpreting their genesis, which

is historically and systematically based on the entities of the quasi-ontology of the first level. To consider them in the traditional sense of Platonism as entities in a realm of Ideas is doubtless an unfounded metaphysical supposition. This extreme standpoint finds, of course, its support in Nominalism by its one-sided (in principle empiricistic) conception, admitting only one kind of existence, i.e., factual or physical existence. The unacceptable consequences of both conceptions--that of Platonism and that of Nominalism--can in our opinion be avoided by our differentiation and relativization of existence in respect to different frameworks.

By this exposition of the nature of existence in the framework of our proposed materialistic foundation of logic, we are concluding this paper, without pretending to have exhausted this controversial subject-matter.

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Notes

1. A discussion of this conception is, e.g., contained in our paper "Über den Gegenstand der formalen Logik"; DZfPh 12/6 (1964), pp. 1102-1111.
2. Cf., e.g., W. Stegmüller, "Das Universalienproblem einst und jetzt", in Archiv für Philosophie, 6 (1956), pp. 192-225, 7 (1957) pp. 45-81; G. Kung, Ontologie und logische Analyse der Sprache. Eine Untersuchung zur

zeitgenössischen Universaliendiskussion, Wien, 1963.
3. Cf., e.g., W. V. Quine, From a Logical Point of View. Nine Logico-Philosophical Essays, Cambridge, Mass., 1953; L. Tondl, Problémy sémantiky, Praha, 1966, pp. 302ff.
4. See "Empiricism, Semantics, and Ontology," in Revue Inter. de Phil., 4 (1950), pp. 20-40.
5. "Ontological Commitments," The Journal of Philosophy, LV (1958) p. 1013.
6. N. Goodman & W. V. Quine, "Steps Toward a Constructive Nominalism," JSL 12, 1947, p. 105, note 1.
7. "Über Sinn und Bedeutung," Z. F. Phil. u. phil. Kritik, 100(1892), pp. 25-50.
8. See also K. Berka & L. Kreiser, "Eine grundsätzliche Erweiterung der Semantik G. Freges," DZfPh 10/1968.

George A. Brutian

"Lenin and Logic"*

Questions pertaining to logic have an important place in the theoretical heritage of V. I. Lenin. It would be erroneous to see this only in terms of the erudition of the creator of the world's first socialist state. Lenin saw dialectics as the soul of Marxism, ascribing to dialectics not only the highest form of philosophic thought, but also the method of transforming the surrounding world in a revolutionary way.

Logic for Lenin not only had a quite direct relation to dialectics, but was also seen as congruent with dialectics, in a certain sense. The focal question in the problem-complex of logic raised by Lenin was that of the relationship between logic, dialectics, and the theory of cognition. He answered by positing a congruency of all three, seeing all three from a materialist perspective. Lenin's comprehension of these three was in full accord with the views of the founders of dialectical materialism, Marx and Engels.

Engels had emphasized the historical aspect of materialism by recognizing the transformation of materialism due to each epochal discovery in the histories of the physical and social sciences. This approach is pertinent also to the sciences of logic.

* Professor Brutian's article is abridged for this volume. Translated by Professor Paul Crosser.

On the whole, the various theories of logic of given eras present by their very nature are responses to the demands the sciences make upon logic at any particular time.

Aristotle's philosophy and his logical teachings were not dichotomized. His philosophy also had subsumed under it the sciences, expressing the quintessence of the intellectual comprehension of external reality and man's spiritual world. Paradoxically, Aristotle, though it is correct to consider him the founder of logic as a science, did not use the name "logic", it came into use later with the Stoics. It is also correct that Aristotle's logic was formalistic, though this needs qualification.

It is undoubtedly correct that Aristotle described with exceptional insight the formal-logical attributes of thought, its structure and construction.* But, in addition to his formal-logical description of thought, Aristotle inquired into a range of thinking lying beyond formal logic. Even according to the classic writers of dialectical logic, some aspects of the Aristotelian logic pertained to the problem-complex within the province of dialectics. First of all there is the question of truth as a logical problem, and there is the attempt to discern the contradictory nature of the form of thinking. Such issues of Aristotle's philosophia prima attracted Lenin's attention. Lenin characterized Aristotle's logic as "the questioning,

* Aristotle had brought these to such a dimension and level that Lenin stated in his summary of Hegel's Science of Logic, "Aristotle had described with such completeness the logical forms, that 'essentially' there was nothing to add." Cf. V. I. Lenin, Complete Works, vol. 29, p. 163 (Russian ed.).

the search for the approach to logic [later] advanced by Hegel."

Philosophers and logicians in the period following Aristotle touched upon problems, in various degrees, which often went beyond the framework of formal logic. The evolution of these tendencies culminated in Kant's "dialectical logic". This development was not just a terminological matter. Kant's transcendental logic, on the one hand, synthesized many elements of the dialectics of thought, and, on the other, stimulated further development. However, Hegel transformed these questionings, tendencies, and these fragments into an entire system of dialectical logic. It was not unnatural, then, that, in his logical inquiries, Lenin continually addressed himself to Hegel, attempting to sublate him critically, never, of course, rejecting Hegelian dialectics. Lenin copiously summarized Hegel, appending numerous comments, while he concluded that the Science of Logic that most idealist work of Hegel became less and less idealist, more and more materialistic. As the recognized authority in materialistic dialectics, Lenin evaluated Hegel's work as the acme of idealistic dialectics.

Moreover, the conception of logic of Lenin was a direct link, a stepping stone, in the evolution of the notions of Marx and Engels. In this regard it is apparent that there is a complete congruity of thought, an identity, of world outlook for and of the goals of Marx, Engels, and Lenin. Hegel's "critical idealism" was sympathetically viewed by Lenin, as it had also been with Lenin's predecessors, Marx and Engels. Lenin was convinced that a "critical idealism" was closer to a "critical materialism" than to a crude materialism. In contrast, dialectical

materialists reject the "vulgar materialism" advocated by Vogt, Büchner, and others. Thus, it is demonstrated that science, in its progressive path, absorbs all that is valuable, everything that was contributed by the founders of logic; even though these contributors and founders had contrary world outlooks to dialectical materialism.

Marx was the first to refashion dialectical logic and to put it into a materialistic mold. He did not place, it is granted, his materialistic notions of dialectics into specific treatises. The purpose which Marx set himself, the goal of providing the working class with a theoretical tool for the revolutionary transformation of the world, determined the form of expression of all of his scientific interests. First of all, Marx analyzed the economic structure of society, thus establishing a political economy, based on the principles of dialectical logic derived from Hegel (but fundamentally reshaped by Marx). This was accomplished to such a degree of perfection that Lenin observed, "though Marx did not have a 'Logic', he did have the logic of Capital."

Lenin's conception of logic was fully derived from the teachings of Marx and Engels, presenting a new step in their development. Lenin called attention to the subject matter of dialectical logic, its relationship per se to dialectics, in full accord with the postulates of the founders of Marxism which refers to the most general laws of the development of nature, society, and human thought. For Lenin the logical structure of Capital, Marx's main work, is an application of logic, dialectics, and epistemology of materialism to a particular science. Lenin attributed an overriding significance to the fusion of these

elements. The congruity of logic, dialectics, and epistemology in materialism overcame, according to Lenin, the gap between ontology and epistemology which had characterized the various philosophic systems prior to Marx. Hegel had perceived this gap, and he established a new system, postulating that logic is identical with Thought about Being. He defined metaphysics as the science of things comprehended in thought. Nevertheless, the identity of Thought and Being, Hegel's view that thought is the only attribute of reality, of ultimate Being, does not contradict the materialistic conception of the classics of Marxism. Following Marx and Engels, Lenin considered an inquiry scientific when it approached its subject matter dialectically, simultaneously applying the epistemology of materialism and dialectical logic.

This thesis of the congruity of logic, dialectics, and the theory of cognition within materialism has elicited great interest in Soviet philosophic literature. Expositions on the thesis above have formed the content of the works of the following Soviet logicians and philosophers: -- M.N. Alekseyev (Dialectics of the Forms of Thinking, Moscow, 1959; Dialectical Logic, Moscow, 1960), V. Asmuss (Dialectical Materialism and Logic: An Essay on the Development of the Dialectical Method from Kant to Lenin, Kiev, 1924), V. A. Vyazulin (The Logic of "Capital" of K. Marx, Moscow, 1960), G. G. Gabrielyan (Marxist Logic as Dialectics and Theory of Cognition, Yerevan, 1969), D. P. Gorski (The Problems of General Methodology and Dialectical Logic, Moscow, 1966), A. Kasymdjanov (The Problem

of the Congruity of Dialectics, Logic and the Theory of Cognition, Based on the "Philosophic Notebooks" of V. I. Lenin, Alma-Ata, 1962), B.M. Kedrov (The Unity of Dialectical Logic and the Theory of Cognition, Moscow, 1969), P. V. Kopnin (The Philosophic Ideas of V. I. Lenin and Logic, Moscow, 1969), V. I. Maltsev (Essays on Dialectical Logic, Moscow, 1964), Z. M. Orubshev (The Unity of Dialectics, Logic and the Theory of Cognition in "Capital" of K. Marx, Bakre, 1968), I. S. Narski (The Problem of Contradiction in Dialectical Logic, Moscow, 1969; Dialectical Contradiction and the Logic of Cognition, Moscow, 1969), M. M. Rosental (Principles of Dialectical Logic, Moscow, 1960), S. B. Tseritelli (Dialectical Logic, Tiblisi, 1965), and B. I. Tshvekessov (Materialistic Dialectics and the Theory of Cognition, Moscow, 1962). This list is not all-inclusive. Among the works listed the fundamental studies of V. Asmuss, B. M. Kedrov, and P. Kopnin can be singled out.

The postulation of Lenin of the congruity of logic, dialectics, and the theory of cognition is, on the whole, accepted by Soviet logicians and philosophers, who in the course of many years have engaged in lively discussions of these problems. Some, for instance M. N. Aleksyev, V. I. Tscherkasov, V. I. Maltsev, S. B. Tseritelli, with a few variations in their viewpoints, insist on the independent existence of dialectical logic as a science, distinct from dialectical materialism. According to this conception, dialectical logic inquires into the specific forms of dialectical thinking. The unity of logic, dialectics, and epistemology, moreover, expresses itself in the following manner: logic

investigates the dialectical forms of thought as based upon the theory of cognition of materialism. Thus, there are two forms of thought here, one dialectical, one formal-logical. The former constituting the subject matter of dialectical logic, the latter of formal logic. This peculiar "logical dualism" was subject to criticism by its opponents.

Other Soviet logicians identified and explained materialism's logic, dialectics, and epistemology in a uniform way, since they followed Lenin's view that it is not necessary to have three separate areas, for they all have the same reference. Marxist philosophy was observed to be the science of the most general laws of the development of nature, society, and human thought. Another view, strongly expressed by K. S. Bakhradse, resulted in acknowledging the existence of but one logic, viz. formal logic, seeing logic as the science of the forms and laws of correct thinking. This conception has been criticized, in turn; for, in essence, it denies the existence of dialectical logic.

P. V. Roshin, M. N. Rutkevitch, and a few other Soviet philosophers interpret Lenin's thesis of the congruity of logic, dialectics, and epistemology as the unity of the parts and the whole. The subject matter of dialectical logic is represented as a part of the subject matter of the Marxist theory of cognition, while the subject matter of epistemology is given as a part of the subject matter of materialist dialectics. The weakness of this view is the realization that it is logically unfounded.

A more correct interpretation of Lenin's view is offered by those philosophers and logicians (Kopnin,

Kedrov, Narski, and some others) who consider that a unified system of logic, dialectics, and materialist epistemology, depending upon the object of application, performs different functions. The method of materialist dialectics as applied to the laws and form of a single structure of human thought, in terms of a function of the reflection of reality, assumes the quality of dialectical logic. Thus logic does not inquire into specific forms of the dialectical form of thought, but rather refers only to the dialectics of the common forms of thought of mankind, whatever they may be, simple or complex. The correctness of this way of looking at it is affirmed by Lenin himself: "in any sentence it is possible (and imperative)... to discover the budding of all elements of dialectics, to demonstrate thereby that all human comprehension in the most general form has a dialectical character."

In full accord with Hegel, Lenin considered that the primary content of logic (dialectical logic) presents itself in relations, i.e. in the transition, in the contradiction, of concepts. In contradistinction to Hegel, Lenin began with the viewpoint that all these concepts, as well as their relationships, transitions, and contradictions, constitute reflections of the objective world. According to Lenin, the dialectic of things creates the dialectic of ideas, not vice versa. This analysis is not to be regarded as an end in itself, but as a necessary condition for reaching truth. As with the German philosophers (in particular Hegel), Lenin equated logic and truth.

To reach truth one must be guided by the entire arsenal of the dialectical epistemology. In one of his works in which he examines the concrete character of the

question under discussion, Lenin emphasized these features of dialectical logic: (1) overall comprehension, the inquiry into all aspects of a thing, all its connections and "instrumentalities"; (2) inquiry into the thing in its development, its "auto-mobility" (self-movement), and changes; (3) consideration of human practice in the comprehensive "determination" of the thing; accordingly, practice becomes a criterion of truth, as well as a practical determinant of the connection of the thing with human needs); and (4) the principle of the concreteness of truth.

An important question arises. What is Lenin's position on formal logic? Does not Lenin's development of dialectical logic signify a rejection on his part of formal logic? This question is also important since dialectical logic's opponents (who are also opponents of Marxist philosophy as a whole and of Hegelianism), since they have held up the attainments of formal-mathematical logic, attempt to detect incongruities and contradictions between formal and dialectical logic.

Lenin's position on formal logic was based upon those of his predecessors, the founders of Marxist philosophy. In principle, there is no difference between Engels and Lenin's viewpoints. Lenin underlined Engels' belief of the independent existence of formal logic as a philosophic science. Formal logic has acquired dfferent interpretations, depending on the philosophic position of its interpreters. One should not be surprised that, for the most part, the categories of logic have received a metaphysical and an idealistic interpretation. A careful and thoughtful reading of Lenin's legacy relative to logic inevitably must result in the

conclusion, that he did not take a critical stand on formal logic and its laws and categories as such. He only subjected the metaphysical and idealistic interpretations of formal logic to criticism. These misinterpretations absolutized formal logic by viewing it as the only principle of truth, resulting in an unwarranted transformation of formal logic into a universal and exclusive method of cognition, according to Lenin.

Opponents of dialectics often advance the following statements: Since dialectics recognizes the contradictions, dialectical logic cannot be considered as compatible with formal logic. Formal logic, basing itself on the law of non-contradiction, rules out, by its very nature, any contradictory thoughts; upon admission of a contradiction any theory loses its value. For example, this kind of criticism can be found in the well-known philosopher Karl Popper.*

This critique, however, overlooks its target. It misses a major point, since it does not pay attention to a crucial distinction. Lenin recognized a distinction between dialectical and formal-logical contradictions. Further, there should be no doubt that the classics of dialectical materialism recognized the principle of contradictory development as applying to everything existent. Lenin saw as an essential part of dialectics the splitting of the one into many and the respective cognition of these contradictory parts. He defined dialectics succinctly as the study of the unity of opposites.

* His article "What is Dialectics?", has been published many times.

Certainly in all those cases, Lenin refers to contradictions in real life. He makes reference to contradictions in the process of thought, not formal-logical contradictions. Against the absence of a distinction between the two types of contradictions, Lenin took a strong stand. He ridiculed those who confused the "contradictions of real life" and "contradictions resulting from erroneous reasoning". Lenin categorically asserted that the "logical contradictory", under conditions of correct logical reasoning, does not have to result in a subject matter rent by contradictions. This kind of concept Lenin demonstrated in such concrete inquiries as economics, politics, and sociology. What he meant was that the dialectical contradiction is to be kept as an ultimate, which by itself does not have to enter into the sphere of every analysis of every subject matter.

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Georg Lukács

"The Ontological Foundations of Human Thought and Activity"*

Everyone knows that in the last decade, a radical derivation from former epistemological tendencies, neo-positivism, with its fundamental rejection of every ontological inquiry as unscientific, has absolutely prevailed. Further, its dominance extended beyond philosophical circles to the practical sphere. Once we seriously analyze the theoretical motives of the political, military, and economic leadership of today, one finds that it has been determined, consciously or unconsciously, by neo-positivist methods of thinking. They have had unrestricted omnipotence; once the confrontation with reality leads to the beginning of a crisis, the revolution in the sphere of political economy permeates into the field of philosophy (in the broadest sense).

Rather than being concerned with the ontological probings of the last decade, we shall restrict ourself to explaining certain problems initiated by Sartre in this direction.

They arise in relation to Marxism. We know quite well that this historical philosophy was rarely conceived as an ontology. Our study will propose, on the

* Translated by Ralph M. Faris and David H. DeGrood. Abridged for this volume. Reprinted and translated by permission from Hermann Luchterhand Verlag, from its publication Ad Lectores, 1969.

contrary, that the philosophical conclusions of Marx, in fact, were drawn from the logico-ontological idealism of Hegel, arriving theoretically as well as practically with the outlines of an historical materialist ontology. Hegel prepared the way, interpreting ontology historically, in contrast to the religious ontology, by tracing the necessary historical development from the "bottom", from the simplest, to the "highest", to the most complicated objectifications of human culture. Obviously, stress was placed upon social being and its productions, and as it was characteristic of Hegel, man appears as self-creating.

Marxist ontology removes all logico-deductive and historico-developmental, teleological elements from the Hegelian. Also, with this materialism "standing on its feet", the synthesis of simples disappeared from the series of moving moments of this process. For Marx the starting point is neither the ancient, materialist atom nor the Hegelian, highly abstract Being. Ontologically, there are no such things. All existing things must always be objective, always moving, changing parts of concrete complexes. Two basic consequences can presently be drawn. First, all of being is an historical process; second, the categories are not predicates of something existing or coming into existence, nor, as well, (ideal) formal principles of matter. Rather they are changing and changed forms of matter itself: "forms of existing", "determinations of existence". Since the radical position of Marx (departing also from the older materialism) was frequently interpreted in the old spirit, the false idea arose, that Marx de-emphasized the importance of consciousness as against material being. Later we shall show the falsity of this view. What matters now is to see that Marx interpreted consciousness as a later

product of material ontological evolution. For a materialist philosophy of evolution the later product must never be conceived to be less important ontologically. Consciousness of reality reflects and possibly changes the bases of its modifying activity, pointing to a measure of real Power, rather than something frail.

Let us deal with the ontology of social being. We cannot grasp its particular nature, if we fail to take account of its arising on the basis of organic being (which develops from inorganic being). Science has already begun to uncover the forms of transition from one level to another. We find a sudden leap, something qualitatively new, which could never be deduced from simpler forms. As the qualitatively new arises, this novelty is, in many cases, a departure from the manner of reacting of the more fundamental forms to new categories of reacting. One may mention the way in which light works upon plants, in a purely physico-chemical manner, developing later as sight in the higher animals. Thereby there arise unique kinds of being (though the new forms should not be thought of as the original, fundamental existences).*

A certain higher development of organic reproductive processes is necessary in order that labor will be able to emerge as a dynamic, structural foundation for a new type of being. The essence of

* Lukács has in mind the idealist view that mind generates material reality; whereas with materialism, mind is a late arrival on the cosmic panorama--Editor.

labor consists in its surpassing the forms of living beings in its interaction with its environment. It is not the perfecting of production which creates the essentially detached moment, but rather the role of consciousness which stops being a mere epiphenomenon of biological reproduction: whose product is, Marx states, a result, which was already ideally contained in the beginning of the process, "already in the idea of the worker".

It is quite striking that the materialistic dichotomy of organic nature and social being attributes a decisive role to consciousness. One should not, however, forget that it is able to maintain its emerging complex of problems (its highest type being freedom and necessity) only by the active role of consciousness, precisely and genuinely ontologically. Where consciousness has no effective power, such a contrast could not appear. When such a role belongs to consciousness, it must resolve these antitheses.

One can with good reason designate the laborer, who through his work moves from an animal to a man, as an active being. Undoubtedly, laboring activity arises as a solution to his needs. If, however, one were to pass over its essence, one would be presupposing an immediate relation. On the contrary, man, precisely because he is an active being, because he (parallel with social evolution, in a progressive way), with his goals, the possibilities of his gratification; generalizes his questions, and in his answers to these needs of his activity, establishes and enriches his goals, often through extensive adjustments. Thus, not only the answer but the question as well are direct products of the

activity of conscious conduct. Therefore indeed, the answers do not cease being primary in this moving complex. Material need, as the motor of individual as well as of social reproductive processes, first sets the labor complex truly in motion, and all adjustments actually serve the purpose of satisfying it. Certainly by means of this series of adjustments and man's using and controlling such powers there is effected a higher development of man's capabilities, changing continuously both his relation to surrounding nature, as well as the relationships between men, etc., while drawing from nature practical, effective powers, relations, attributes, which had previously not been released.

In the case of labor, there is also the possibility of its higher development, which it ontologically imparts to it by man acting. Already in this way, but wholly as a consequence of the transformation of the mere reactive-passive adaptation of the reproductive processes in the environment, through its conscious and active metamorphosis; labor does not become merely a fact, in which the new type of social being attains its expression, but (quite ontologically) arrives at a model case of a wholly new form of being.

Labor consists of telic (teleologischen) projects, which set the respective causal series in motion. This well-established fact eliminates a thousand-year-old ontological prejudice. In contrast to causality, which describes a spontaneous law, in which the movements of all forms of being obtain their general expression, teleology is a way of projecting (Setzungsweise), one constantly accomplished by consciousness, which, guiding it in

definite courses, nevertheless can set the causal series in motion. Since in the earlier philosophies the teleological project was not understood as a special peculiarity of social being, it was necessary to have puzzled out on the one hand a transcendental subject, and on the other a peculiar character of teleological acting relationships, in order to be able to speak about nature and society's tendency to develop in a teleological manner. The duality in this state of affairs, that in a society which actually has become social, in the majority of its activities, some totality moves the whole, is the teleological origin, is equally its real existence whether the individual remains or is included, yet they remain in causal relationships, which relationships are completely detached from their teleological character; such is the distinctive point of view here.

Every social practice (Praxis), if we think of labor as the model, reconciles these opposites. On the one hand, each man faces the alternatives of which he must decide whether he shall do something or abstain from so doing. Every social act therefore originates from alternatives about future, teleological projects. Social necessity can only be successful in the (often anonymous) pressure on the individual, to accomplish his alternatives, deciding upon a determinate course. Marx pointed out correctly in this situation that men, "under penalty of destruction", are pressed to act by the circumstances in a certain way. However, men must consummate their activities, in the final analysis, by themselves, even if they often act against their convictions.

From this unavoidable human situation of living in society is derived the entirety of the real problems which we subsume under Freedom. Without infringing upon the sphere of labor in its proper sense, we can refer to the categories of value and duty. Nature knows neither the one nor the other. The transformation of something into another in inorganic nature has, self-evidently, nothing to do with values. The situation is altogether different in respect to work. Knowledge distinguishes in general very clearly the objectively existing Being-in-itself of objects from its merely conscious Being-for-itself, which one finds in the epistemic process. Now, however, the Being-for-itself of the products of labor is transformed into its objective real, existing condition, precisely to that through which it can fulfill, if correctly situated and realized, its social function. In this way it becomes valuable (or in the case of failure, worthless, valueless). It is only through the actual, objective development of Being-for-itself that value can be derived. That these spiritual (geistigere) forms are drawn from the higher stuff of social life, does not put aside the fundamental meaning of its ontological genesis.

Duty stands in an analogous relation. Duty constrains one through social goals, determining human ways of behaving. It is the essence of labor that, in all its variety, it must satisfy the initial goals to which men direct themselves. For this reason duty is always implicit in each act. Also here, it does not alter the existing, decisive factors, since this dynamic structure will be transmitted to the purely spiritual laws of action.

It shows itself in opposition to the existing connecting links, which lead from the original to the later spiritual ways of behaving; this in greater clarity, in contrast to the epistemological-logical methods, by which the course that leads from the higher forms from the original, become invisible, so that these appear from our own historical era immediately as antitheses.

When we view something only from the projecting subject from a given point in respect of the total process of labor, thus we see well enough that this indeed consciously takes place within the telic project; and yet at no time is it possible to observe all of the conditions of an activity, much less foresee all its consequences. Of course, this does not stop man from acting. There are countless situations which, at the risk of destruction, must be dealt with unconditionally, despite the fact that man is able to observe only a fraction of the circumstances. Often by laboring man realizes that he commands only a small part of the conditions; he realizes, however, that he is able to accomplish something thereby, since his need pressures him, and his labor also stands as a gratification in expectation.

This unavoidable situation has two important consequences. First, the inner dialectic of the continual perfection of labor while its process is being carried out, owing to the observation of its results, etc.; the extent of the known, achieved results constantly improves and consequently labor itself is always manifold, always comprehending greater dimensions, will always be more and more extensively modified, as well as intensively.

But since this process of perfection exhibits to us basic facts, which the state of partial knowledge of complete conditions cannot overcome (parallel to its growth), the manner of existing of labor brings forth the recognition of a transcendent reality, whose unknown powers man somehow attempts to turn to his advantage. This is not the place to investigate the various forms of magical praxis, religious beliefs, etc., which grew out of this situation. They should not be entirely ignored, however, constituting one form nevertheless of ideological form. In relation to these things mentioned (magical praxis), and because labor is not only the objective, ontological model of all human activity, but also it is the prototype for the divine creation of reality, of all things, by means of an omniscient creator teleologically producing reality's forms.

Labor is therefore a conscious process, presupposing less than complete, concrete knowledge of specific ends and means. Since developments, perfection, belong to its ontological token of essence, labor creates social forms of a higher order. Perhaps the most crucial of these differentiations would be the increasing independence of preliminary, preparatory labor,* which, always relative, separates knowledge as ends and means from concrete labor itself. Mathematics, geometry, physics, chemistry, etc., were originally components, instances, of this preparatory process of labor. Gradually, they grew to independent disciplines, without being able to shed completely their

* E.g. theorizations or reflections--Editor.

original function. At the same time, the more universal and independent these sciences became, the more universal and perfect labor became; the more they spread out, intensified, etc., the greater became the influence of such applied knowledge upon the ends and means of the performance of work.

Such a differentiation takes place already in a relatively highly developed form of social segmentation. This itself, however, is the most elementary result of the development of labor itself. Even before it had been brought to its maximum intensive development, during the same period this consequence already emerged in the hunting situation. What is ontologically noteworthy is the appearance thereafter of a new form of the telic project: namely, it would appropriately not have to work thereby with a part of nature for human projected goals, but a man (or many) would have to set up additional telic projects in a predetermined manner. Since a certain kind of work can only have a uniform, central goal, it implies that means must be found to insure unity of purpose in the preparation and performance of work. Therefore, these new telic projects must develop simultaneously with the division of labor in actuality, and further must remain as indispensable elements in this segmentation of work. From these social segmentations, and with the emergence of social classes having antagonistic interests, these teleological projects become the structural and intellectual foundations of that which is termed Marxist Ideology. From these struggles, which are sharpened by the development

of production, ideologies show the forms by which men become conscious of these contradictions, and by which they then fight them out.

More and more deeply these conflicts penetrate collective social life. From personal and directly personal, annulled contradictions, and in everyday life, they reach up to these crucial complexes of problems, which mankind had attempted to eliminate in its great social revolutions. However, the most fundamental type of structure always exhibits certain essential, common characteristics: just as for labor itself it was inevitable that real knowledge about its natural process would come to light, in order that the assimilation of nature by society could be successfully administered; thus it is also indispensable, too, that we have a certain knowledge about man's constitution, men's personal and social relationships, in order that we can bring about those telic projects we desire to see fulfilled. With such vital discoveries, initially taking the form of custom, tradition, and habit, as well as that of myth, there arose the later sophisticated procedures of the sciences. Though we cannot deal with the details in this lecture, his assimilation of nature and his telic projects influence his knowledge. This fact should not lead to a theoretical exaggeration of unity, nor to absolute difference either. There are ontological similarities and differences existing simultaneously, to which the solutions can only be found in a concrete, socio-historical dialectic.

I have been referring to the socio-ontological principle. Each social event that springs from telic, individual projects is nevertheless a pure, causal

character. The teleological genesis has important natural consequences for the totality of social processes. On the one hand, conditions arise (with all of their consequences), which nature would never produce; e.g. the primitive wheel. On the other hand, every society develops so that necessity ceases to operate mechanistically, spontaneously, its method of operating becoming continually stronger to the extent that it causes, pushes, and pressures men towards specific teleological decisions, or to prevent them from making given decisions.

The total process of society is a causal one, which has its own lawfulness, at no time, however, is this total process an objective, consciously designed teleology. Also when they are successful, men or groups of men realize their projected goals, consequently generating a situation quite different from what they had willed. (One can mention, then, how the development of the forces of production in antiquity destroyed the foundations of society, how there emerged, at a given stage of capitalism, periodic economic crises, etc.) This inner contradiction between telic projects and their causal consequences increases with the growth of society, with the intensification of socio-human interest in them. In relation to this widening contradiction, great economic disasters (one can think of the crisis of 1929) can rise, appearing to be unavoidable, natural catastrophes. During the greatest upheavals, e.g. during great revolutions, however, history demonstrates that the role of that which Lenin chose to term the subjective factor was very significant. The difference between the projected goals and their

results are indeed expressed as the factual superiority of the material elements and tendencies in the reproductive processes of society. This does not mean for all time that this itself controls necessity, that no enduring oppositions can be accomplished. The subjective factor, arising out of the human reaction to such changing tendencies, remains open to many domains, a constant occasionally modifying them, often being even the decisive factor.

We have attempted to demonstrate how the decisive categories and their relations with social beings have already been present in labor. We shall not detail the gradual advance of labor to its totalization in society. Thus, we simply skip over the most important mediating areas, bringing out more clearly, at least, the most universal connection of the genesis of society and history with their own development. Above all, we propose to examine what economic necessity consists of. At the outset, it should be emphasized that this is not a natural, necessary process, though Marx himself, in his polemic with idealism, occasionally used such an expression.

In previous economic development, we can see three directional developments, which have, it is well-known, come to pass, often very unevenly, independently of men's desires and knowledge, which also lie at the foundation of our telic projects.

First, socially necessary working time, labor-time for human reproduction, tends constantly to diminish. As a general tendency this is not disputed by anyone.

Second, this process of reproduction itself became ever more socially intensive. When Marx spoke of a permanent "recession of nature's barriers",

he intended, on the one hand, that the basic form of human (and therefore of social) life relative to nature's processes never entirely ceases; while, on the other hand, the quantitative as well as the qualitative aspects of the purely natural laws recede in production, as well as in the product: that all the decisive instances of human reproduction (such as nourishment and sexuality) become transformed permanently and essentially into social moments in their own right.

Third, economic development creates more and more critical qualitative as well as quantitative relations between individuals, who originally appeared in tiny, independent societies. At present one finds realized the greater and greater economic predominance of the international market, already showing, at the very least, an economically unified humanity. This unity lasts certainly only as a reality and formation from real economic unifying principles. It concretely manifests itself in a world in which this integration into our lives creates the most difficult, the sharpest conflicts, e.g. in the Black question in the U.S.A. We try to discern the important tendencies, external and internal transformations of this social being through which its particular structure is maintained, since the process in which man has developed from a being of nature to a human personality, from a relatively highly developed kind of animal to being a human, to mankind. All of that is the result of the initiation of the causal series of complex society. The process itself has no goal. Its higher development, in addition, includes the structuring of higher and higher formations of more

and more fundamental contradictions. Progress, indeed, is the synthesis of human activities, but it is no way its consummation, in the sense of a general Teleology: moreover, primitive, yet ever refined, economic stages are destroyed again and again by evolution; therefore, objective economic progress appears constantly in the form of new social conflicts. Thus there is produced from the original community of men the seemingly insoluble antinomies of class struggles; thereby also there are the most vexing forms of inhumanity resulting from such progress. Thus today, the universality of human alienation is a sign that economic development is about to revolutionize the relationship of man to his work.

BUDAPEST, HUNGARY

Bogusław Wolniewicz

"Wittgensteinian Foundations of Non-Fregean Logic"

The term "Non-Fregean Logic" has been introduced in 1968 by the well-known Polish logician Professor Roman Suszko to mark the distinction between two kinds of logical systems. A logical system is called by him "Fregean", if for its propositional calculus the following formula holds as a theorem:

(F) $$P \equiv q \longrightarrow P = q$$

He calls this formula "the axiom of Frege", and it is not difficult to see why. (According to Frege's theory of meaning all true propositions denote the same, and similarly - all false ones. Thus if two propositions are materially equivalent, their denotations have to be identical; and exactly this is stated by the formula F.) The foremost example of a Fregean logic is the classical propositional calculus, but- as we shall see - the three-valued logic of Łukasiewicz is Fregean too. On the other hand, a logical system is called "Non-Fregean" if the formula F is rejected in it as a theorem.

Some logicians have objected to drawing any such distinction, on the ground that in the classical propositional calculus there is no identity sign for propositions, and that consequently nothing like the "axiom of Frege" can be a theorem of this particular logical system. This objection, however, has a flavor of spurious innocence, being apparently based

on the dubious principle that what is not spoken about doesn't exist. To see this let's note in the first place that the axiom of Frege is deductively equivalent to the following schematic formula:

(F') $\quad p \equiv q \longrightarrow / \quad \Phi(p) \equiv \Phi(q) /$

Certainly, in the ordinary propositional calculus there is no such schema either. (Though it is present in one of its variants, namely in Leśniewski's protothetics.) But we have there all its particular instances, known as "the laws of extensionality":

$$p \equiv q \longrightarrow \sim p \equiv \sim q$$

$$p \equiv q \longrightarrow p \wedge r \equiv q \wedge r$$

and so on.

By these laws whatever holds good of one of two materially equivalent propositions, holds also of the other one. Thus from the point of view of classical propositional logic equivalent propositions are indistinguishable, and being indistinguishable they are by Leibniz's principle identical. This is, however, only another way of stating the axiom of Frege, so what is the point of objecting to it?

The idea of a Non-Fregean logic goes back to Wittgenstein's Tractatus, where it is introduced right from the start in the thesis:

"1.13 Facts in logical space are the world."

The Tractatus is in the first place a work on the

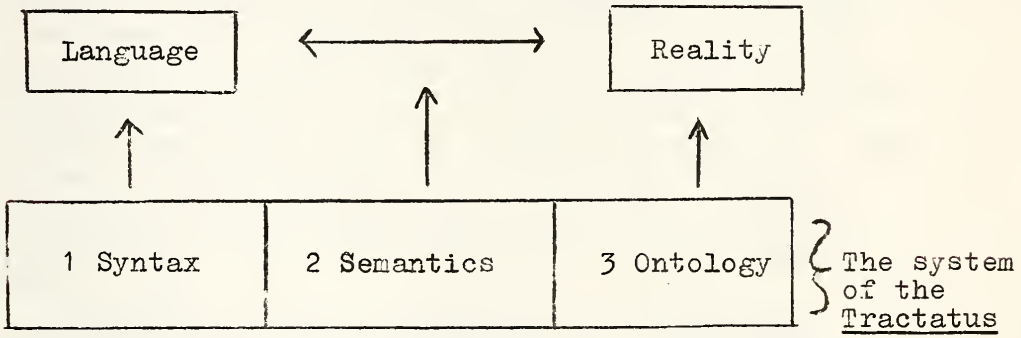
philosophy of logic, and the key to that philosophy is the concept of "logical space". Part of that concept is the idea of a Non-Fregean logic.

Before going on, something has to be said here concerning Wittgenstein's general philosophical position. In our Marxist literature it is a firmly established opinion that Wittgenstein was a logical positivist, and that consequently his philosophical outlook is that of subjective idealism. This opinion, however, doesn't bear scrutiny. In fact it has been rashly taken over from the logical positivists of the Vienna Circle, whose early enthusiasm for the Tractatus was only a sad monument of misunderstanding and a rare specimen of philosophical blindness. Wittgenstein's doctrine is idealistic, no doubt about that. But its idealism is not of the subjectivist variety characteristic of positivism. The doctrine of the Tractatus is a peculiar and powerful variant of objective idealism, and it has much more in common with the doctrines of Plato or Leibniz, than with those of Berkeley and Mach. This again is most readily seen while investigating the philosophical import of the concept of "logical space".

The Tractatus starts from the assumption that the logic of language - its logical syntax - has been already, and in the main correctly, described by the systems of Frege and Russell. But there still remains the big question of a correct interpretation of that description, and it may be put as follows: the logical structure of language being such as described by Frege and Russell, what must be the ontological structure of a reality capable of being described by such a language?

Wittgenstein's answer to this question is embedded

in the whole system of the Tractatus, and it may be useful to represent its framework schematically in a simple diagram (due to Suszko):



It is fairly easy to discern in the text of the book particular theses forming the three main parts of its system; e.g. thesis 4.22: "An elementary proposition consists of names", surely belongs to part (1), 3.203: "The name denotes an object", - to part (2), and 2.02: "The object is simple", - to part (3). Thesis 1.13 is obviously an ontological one too, as are, by the way, all the theses numbered "1 - 2.0...".

Now according to Wittgenstein's syntax, language is the totality of propositions, and according to his semantics the correspondence between language and reality has to be of the one-to-one type. What then, according to his ontology, is meant here by reality,

the one-to-one counterpart of the totality of propositions? Reality cannot be identical with the world, for the world is the totality of facts, and to the totality of facts there corresponds in language only the totality of true propositions (= science, 4.11). Since language contains also false propositions, and these do not have counterparts in the totality of facts, it proves to be larger than the world; and the same holds good of reality too. If the overall semantical correspondence is to be preserved, something in reality must answer even to a false proposition. (And it has to be preserved, for if nothing in reality answered to false propositions they would have no relation to it; and being thus out of touch with reality they could not be false, but only meaningless.)

According to the Tractatus the ontological counterpart of a true proposition is a fact; and the ontological counterpart of a false proposition is the possibility of a fact, something that might be the case. (On the other hand, any fact is the actualization of some possibility.) And reality is the totality of all possibilities, called by Wittgenstein "logical space". Thus we have the following identities:

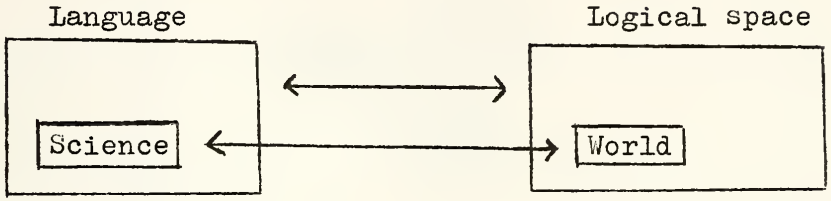
Language = the totality of propositions,

Science = the totality of true propositions,

The world = the totality of facts,

Logical space = the totality of possibilities;

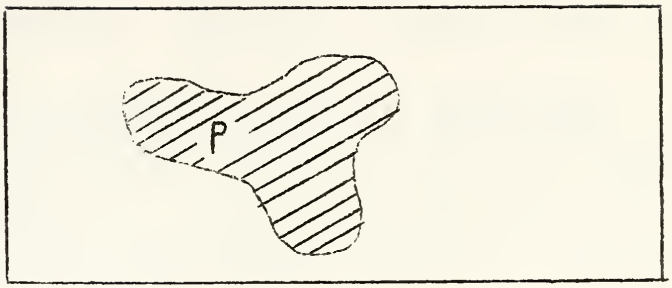
and to make their relations even more precise we may present them in the form of a diagram:



The meaning of Wittgenstein's pronouncement in 1.13 is sufficiently clear now: the world is, so to speak, an island of facts in the ocean of possibilities. But this simile is only a useful first approximation to Wittgenstein's idea of logical space. And we proceed now to the second one.

Logical space is the ontological counterpart of language taken as a whole, but what are the counterparts to its particular propositions? According to Wittgenstein to every proposition there corresponds a definite area of logical space, or - as he calls it - a logical place. Thus the logical place of a given proposition "p" may be visualized like this:

Logical space



It is already apparent that Wittgenstein's idea aims at the construction of a geometrical representation for the logic of propositions, and that his "logical space" is an abstract space like the "phase-space" of physics or the "sample-space" of the theory of probability. And this leads immediately to the next and most essential question: what are to be the points of this abstract logical space?

The right answer to this question has been already given by Stenius (Wittgenstein's 'Tractatus', 1960): every point in logical space is the representation of a possible world! (Stenius' answer is not the only one that has been suggested, but none of the others will do as an interpretation of Wittgenstein's position.) Let's call these worlds "logical points". We have thus:

Logical space = the totality of logical points,

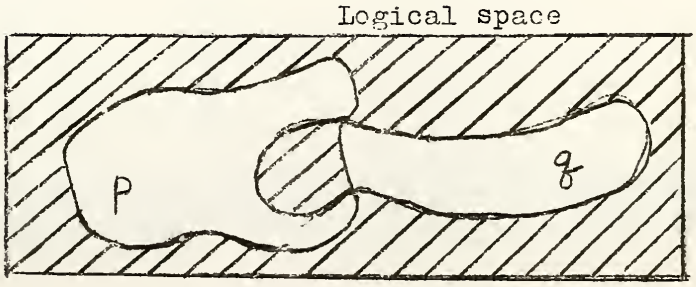
The logical place of "p" = the set of logical points which would make the proposition "p" true.

One point in logical space is designated: it represents the actual world. (Since each possible world is incompatible with every other the designated point is unique.) Of course, we do not know its exact position; but if we know a proposition "p" to be true, we know the designated point to lie in that area of logical space which is the logical place of "p". Thus we have:

"p" is true = the designated point is contained in the logical place of "p".

According to Frege the denotation of a proposition is its truth-value; according to Wittgenstein the denotation of a proposition is its logical place (= a set of possible worlds). And this makes clear, why formula (F) has to be rejected.

A material equivalence "p ≡ q" means that the propositions "p" and "q" have the same truth-value. Upon our interpretation this corresponds to the following situation in logical space:



A statement of material equivalence "p ≡ q" is true if, and only if, the designated point lies as a matter fact somewhere in the shaded area of logical space. And this may be the case, or it may not be. On the other hand, an identity statement "p = q" means that the logical places of "p" and "q" coincide; and this cannot be the case here by any means.

But how can formula (F) be a theorem of Fregean logic, if it is not valid? To solve this puzzle let us assume for the sake of intuitiveness that there are only three possible worlds, marked by the numbers (1), (2), (3) respectively. Under this assumption the relation between language and reality may be presented in the form of a matrix, with columns of the digits "1" and "0" representing the logical places of the corresponding propositions:

		Language							
		p_1	p_2	p_3	p_4	p_5	p_6	p_7	p_8
Logical space	(1)	1	1	1	1	0	0	0	0
	(2)	1	1	0	0	1	1	0	0
	(3)	1	0	1	0	1	0	1	0

In the logical space consisting of only 3 points there are only 8 logical places; and consequently there are

in the corresponding language only 8 extensionally distinguishable propositions (i.e. propositions with different denotations).

However, our assumption was quite arbitrary, for there are as yet no obvious reasons against taking any other number - finite or infinite - to be the number of logical points. So let us assume now, that this number is one: There is only one possible world, namely the actual one. Under this assumption we get the following matrix of the relation between language and reality:

	Language	
	p_1	p_2
Logical space (1)	1	0

In this matrix there are only two logical places. And since these two logical places (columns) are correlated in a one-to-one manner with the two truth-values (digits), there is neither the need nor the possibility of distinguishing the logical place of a proposition from its truth-value, or the designated truth-value from the designated logical point.

But this is exactly the import of the axiom of Frege. According to Frege true propositions are indistinguishable extensionally, for they all denote (bedeuten) one and the same, namely the real world or Being (das Wahre); and similarly with false

propositions: they all denote Non-Being (das Falsche). Therefore Being and Non-Being are the two logical places of Frege's logic.

The number of logical places (m) depends obviously upon the number of truth-values (v), and upon the number of logical points (n); and they are interrelated in a most simple way:

(I) $$m=v^n$$

If our logic is, as usual, a two-valued one (v = 2), clearly the number of logical places will be: $m = 2^n$. But to Fregean logic it is not essential to assume that there are only two truth-values. What is essential to it, is to have the equality:

(II) $$m = v$$

which in view of (I) is equivalent to assuming that the number of logical points is one! i.e.:

(F'') $$n = 1$$

Formula (F) holds good if, and only if, condition (F'') is satisfied. In other words: the axiom of Frege is equivalent to the assumption that logical space consists of a single point. Obviously this single point is at the same time the designated one.

Frege's logic is a logic of two truth-values and two logical places, and so it is Fregean. But the three-valued logic of Łukasiewicz is Fregean too, for its matrix has the form:

		Language
		p_1 p_2 p_3
Logical space	(1)	1 $\frac{1}{2}$ 0

with "$\frac{1}{2}$" marking the logical indeterminateness. (According to Łukasiewicz's philosophy this realm of indeterminateness was to be the Future, regarded as something intermediate between Being and Non-Being; i.e. in our terminology as a third logical place.) But Wittgenstein's logic is Non-Fregean, for there are in it two truth values and many logical places, the number of logical points - and consequently also the number of logical places - being kept variable.

In this framework Frege's logic is just a special case of Non-Fregean logic, but it is also a very peculiar one. This peculiarity consists in its extreme simplicity: to construct a still simpler logic seems out of question. Formal simplicity is thus the great and indisputable merit of Frege's system of logic, but it is not come free of charge. It has been based on the assumption that the real coincides with the possible, and both of them with the necessary, that modal distinctions are not concerned with reality, but only with our thoughts.

This assumption may be disputed, but that is not our point. What is to be insisted on here, is only

the fact that in Fregean logic there is such an assumption present.

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Ion Banu

"The Graphic Figure and the Philosophical Abstraction"*

The theme of the present study is only one in the vast range of questions which arise in connection with the formation, in the early stages of the history of philosophy, of philosophical abstractions and syntheses, and with the origin of their placement into categories.

The role of poetic metaphor and symbol has often been pointed out in relation to the rendering of philosophical abstractions. This was the time when philosophy was still in its primary stage of the abstract universal, which as yet lacked a specific conceptual expression and a categorial language.

The first Greek philosophers were poets, not only because this was needed to satisfy the ancient Greeks' thirst for beauty, but above all because the inherent beauty of the poetic metaphor made the logic clearer, more accessible, enabling them to reach their ideal of philosophical assertion. Though when compared to categorial expression the metaphorical-symbolical one is less accurate, it is nevertheless superior to the former in one way, viz. in its ability to communicate not only to the philosopher, but also to the vast number of non-philosophic minds.

Now all of this is quite well known. What is not similarly known is the part played by the graphic (geometric) figure in the early history of philosophy.

* Article abridged for inclusion in this volume.

As in the case of the poetic word, such figures suggest metaphors and symbols (graphic metaphors and symbols), whose comprehensive capacity is often superior.

As a proof of this we shall examine an early moment in the universal-abstract stage of ancient Chinese philosophy. The function of various graphic, geometric designs shall be considered in terms of philosophic abstractions, in distinction from the common sense abstractions usually expressed by ideograms. For example, there is a passage from the Djou-pei-suan-dzing treatise of mathematics (written before the 8th century B.C.) which reads:

> The square figure stands for the Earth. The round figure, i.e. the circle, stands for the Skies (Heaven). . . . The reckonings for the square figure are basic (for those referring to Heaven). It is out of the square that the circle comes. . . . Who knows the Earth, possesses knowledge, who knows the Skies possesses supreme knowledge. . . .[1]

FIGURE I

Let us now consider the figure in the light of the text, to seize the precise moment when the philosophic thought appears, transcending the pictographic and ideographic meanings. (The representation of the

Earth and the Skies by means of a square and an enscribed circle,* pertains to the pictographic stage. There is yet certainly nothing pertinent to philosophy here.) At the level of the ideographic stage, the figure represents the circle inscribed within the square, a graphic metaphor of the Sky's dependence upon the Earth. ("it is out of the square that the circle comes"). The philosophic signification of the drawing shows itself in the idea that heavenly or superior knowledge is based on the inferior learning of the Earth. The pure symbol abandons the metaphor.

It could be said that the ideogram was used as a "categoriogram". We distinguish between a figure rendering an object of the surrounding world, chosen to suggest, metaphorically, a philosophic relationship (e.g. a bow and an arrow, possibly drawn on a text of Heraclitus, illustrating things mentioned by him), and a figure making use of signs without an actual model in the external world. In the former case, the philosophical significance is related to the functioning of a bow and an arrow; it is subordinated to the object described and represented. The graphic reproduction itself is incidental and non-significant, for no further, specific philosophic meaning is contributed by the figure. In the other case, the case of the symbol, the situation is different. An example is the graphic, purely

* The turtle's shell was used for magical purposes in China, due to its allegedly suggestive reference to the universe, with its rather square base (the Earth) and its round carapace (the Sky).

symbolic rendering of the well-known notions of the earliest Chinese philosophy, "yang" and "yin", appearing in the book I Ching (probably previous to the 7th century B.C.); viz. ——— , the continuous line for yang (i.e. for the affirmative or the positive), and — — , the discontinuous line for yin (for negation or the negative). The logic of the discontinuous is the other (alter) of the logic of the continuous; the negative is the other of the positive; the interrupted line of the non-interrupted. These are simple philosophic categories expressed by means of a graphic symbol. Here, the philosophical significance is directly connected with the figure, not with another object represented by it.

At this point, we may pause to discuss ideographic writing, so we may better realize the flaws and advantages of graphic representation in general. It is not accidental that the most complex graphic symbols of abstract philosophic meaning are to be met in the Chinese culture, whose language employs a type of ideographic writing. The philosophico-graphic expression is a natural development, apparently, of the functions of ideographic writing. We stress this because ideographic writing has often been unjustly thought of as inferior to the alphabetic, especially as regards to its capacity to provide stimulation to the mind's attempt to reach philosophical abstraction.

In our opinion, both types of writings have, in this respect, equal qualities, though they express them in different ways.

Moreover, it is true that writing is only able to bring out favorably the existence and free movement of abstractions when these graphic signs become

conventional, i.e. when they escape the concrete. This condition is met by both types of writing. Alphabetic writing achieved it by the capacity of its letters, they themselves having evolved from former pictograms, by acquiring full neutrality in regard to nature's appearances and shapes. They were thus freed from any type of qualitative subordination. Thanks to their complete independence from sensorial images, they provide an urge for reason to escape the empirical, thus opening up the way for essentiality, enabling reason to achieve its work of conceptual abstraction and synthesis.

The ideogram can yield a similar result, only this is achieved in another way, due to the specific character of the ideogram's peculiar kind of simplification. Let us start by considering one of the older Chinese signs for wood, viz.  . The sign obviously refers to trees, ignoring the variety of individual or incidental phenomena, rendering what is common to all the trees from an illustrative, visual perspective. Naturally the phenomenal common character is far from being identical with the general and the essential; however, much like the generality of the essence, the phenomenal common character overlooks and goes beyond sensorial variety--by abstracting that which is principal, it simplifies and thus facilitates access to essence. During their evolution ideograms have gradually, but fully, lost their figurative resemblance to the signified. One could imagine an ideogram teaching us as students of it: "If you really have the desire to find the general, the essence, beyond the shapes of things, beyond

the phenomenality suggested by my graphic character; then consider the phenomenon all the way through, by all means leaving it behind."

Using such a strategy, one can more comfortably pass beyond visual phenomenality, coming to the "pure" ideogram, covering the road to the philosophic abstraction.

From the point of view of the object, the essence is instantaneously given in the substratum of the individual. Since they are discursive, alphabetic speech and writing can only refer to the essence unfolded in time; thus the instantaneous character of the essence is impaired. When one says, philosophically, that something is "difficult to understand", he is precisely attempting to recognize this lack of parity. Meanwhile, the graphic representation appears, like essence itself, to the observer as instantaneous; it is by means of the contiguity of the lines, their various modes of association and dissociation, the mutual attraction and contrast of light and shadow, that the typical relations of the essence can be graphically rendered, while one is observing their concomitance. Tsong Ping, a painter and theorizer who lived in the 4th century A.D., drew the analogy between the instantaneous way of grasping "tao" by intuition and the instantaneous way of grasping the essence by means of plastic form. In this he is referring to the qualities of graphic representations, about whose flaws, as compared to speech and discursive expression, we shall address ourselves later.

Similar attributes, similar patterns of evolution,

can be met with in cuneiforms* and hieroglyphs. Regarding the entirely disparate development of philosophical thinking of various peoples using either an alphabetic, or a hieroglyphic, or a cuneiform or ideographic writing; it can be accounted for by the fact that, complex social, historical, and gnosiological reasons other than the nature of the writing itself, made the peoples differently use the philosophical potentialities inherent in the various types of writing. For example, the philosophical potential of alphabetic writing was not universally actualized. The Phoenicians who created the alphabet had a negligible role in the history of philosophy.

As far as China is concerned, one notices an efficient use of the philosophical potentialities of ideographic writing.

We have already in another study[2] referred to various types of geometric, graphic symbols used in ancient China to express philosophic abstractions. In our study we had presented eight trigrams of the I Ching, standing for the eight alleged substances,

* Yvonne Rosengarten mentions that at a certain moment in the history of cuneiform writing, which itself had been initially pictographic, a turn occurred due to the deliberate desire to obscure the initial image, to make writing a mere convention. Cf. "La civilisation sumérienne de Lagash au III^{e} millénaire," Rev. philos. de la France et de l'etranger, nr. 1, 1967, p. 2.

i.e. forces of nature thought to be the essence of everything in the universe. We had also reproduced the complex geometrical drawing, termed the "Yellow River" and the "Lao River", which graphically symbolized the whole philosophic content of the Hong-fan text in the book Shu King. To repeat what we said then: Ancient Chinese commentators explained

FIGURE II

the meaning of the figure in the following way: - the dark part of the circle stands for Yin, the white for Yang, as the negative is dark and the positive clear. The moment when one part reaches its climax (the convexity), the other, at its inferior limit, already almost invisibly begins to replace it (the thinner part). Both of them contain the germ of their contrary, as suggested the inside spot of a contrary color. Moreover, the 28th hexagram of the I Ching points to the circle as being the Universe or "tai-tsi" and as being halved (as suggested by the ying-yang opposition). The circle as a whole is infinitely moving round and turning.

The circle's turning round suggests the dialectical conception of the infinite passage of an entity into its contrary. Let us suppose the white (representing

an entity) is swelling. It will only give way when it has reached maximum swelling, i.e. convexity; or to put it another way, the developing element only dies after having exhausted its entire capacity for growth. This means the closer it is to its apex, the closer it is to decline. That idea is suggested by the penetration, hardly noticeable initially, of the darkly colored thread into the substratum of the white convexity at its maximum. The insidious thread is amplifying, while flowing into its contrary, the dark spot. But the evolution of either entity is bound to engender simultaneously what is opposed to itself; its conversion into its other would be impossible, unless something of this other had not previously appeared within the self-same former entity (this is the dark spot inside the white convexity, as a seed of the future development of the black). Extreme affirmation leads to negation, culmination to decline. These things already explicitly appear in the book Tao-Te Ching, which appears after the I Ching and whose* philosophical character is universally acknowledged.

The case we have thus far presented also relies on the fact that, within the intellectual life of ancient China, the capacity of a geometric figure to reveal essential reality was not an isolated mental act, but rather a particular example of a more general attitude. What we have in mind is the general use of the figurative. In our opinion, the ancient Chinese used geometric figures in order to connect them to essence, since they believed that figurative representations in general had such

* That is, Tao-Te Ching.

capabilities, geometric figures for them being but a special case of the figurative. Our point is more conclusively made when we consider the other species of the genre "figure".

The other species we have in mind come from the fine arts and horticulture. An old Chinese belief, undoubtedly of magical origin, asserts that the plastic image has the capacity of rendering the hidden essence of an object in the work of art. Much later, the Taoist peisagist painter Tsong Ping (373-443 A.D.) put that old belief theoretically, by writing that, while the wise man addressed tao (envisaged here as the magical, mysterious essence of things) with his mind, the painter was able to reach the same result through the "landscape and its plastic forms."[3] The picture, the landscape, acquires the magical force of including, within a limited frame, the immensities of nature.

The essential potentialities thus attached to painting are manifold. The plastic reproduction is not only capable of rendering the essence, but it also has the ability to ensure a magical fraternization with the essence by the painter.

Furthermore, the painter Wen Tong (fl. 9th century A.D.) was said "to lose self-consciousness when painting bamboo, to identify with bamboo," thus enabling his painting to live the life of the trees. In this way the pictorial image fulfills its function of comprehending essence to such a degree that it enables the painter to experience it, to identify with it, in a magical way. It is also worthwhile to cite the idea of N. Vendier Nicolas, an historian of Chinese art, that the intuitive act mentioned above, though originating from a mystic

impulse, as a consequence acquires a rational character; the magical experience is an instrument meant to stimulate the effort of reason. The result of this same effort is the cognition of the thing's essence.[4]

In this connection we must consider the role of another type of figurative representation, viz. that embodied by horticulture. The garden arranged in such a way as to be a miniature, an artistic suggestion of nature (mountains, valleys, rivers), will, in the Chinese view, enable the passer-by to come in touch with the very essence of nature portrayed by the tiny relief of the garden. The Sinologist, J. Gernet, observes that this is the "same magical principle" met with in landscape painting.[5]

All of that belongs to magic. The magic mentality pervades the plastic horticultural speculation already described. In fact, the geometrical figures we have analyzed previously are, without exception, also associated with magical activities. Where, then, does their philosophical significance arise?

Magic is a mystic doctrine imaginatively making use of the actual features of geometric figures. The figures upon which magic speculates are those which we shall examine, figures which are multi-purposive.

We thus encounter one of the modalities of magic, expressing the conviction of the magician that, the figure is identical with the object of the figure itself considered in its secret, hidden nature; that, imitating or graphically symbolizing natural objects and phenomena through figures, he could communicate with all of the object, including its inherent, invisible force: he could master the object. Consequently he

makes use of the imitative figures--geometric, pictorial, or horticultural. But let us translate this magical language into gnosiological terms. The "phenomenality" (instead of the "figure") of an object is an expression of that very object and its essence simultaneously. The essence is non-apparent, non-phenomenal (instead of "hidden"); in other words, the phenomenal aspect facilitates access (instead of "communication") to the entire object, its non-apparent essence (instead of "hidden force") included. A cognitive approach to the object thus becomes possible (instead of "gaining mastery" of the object). For the magician, who attached magical virtues not only to the figure but also to its possession and to the thing represented, he who possessed the figure, could implicitly possess the object. The realistic philosopher would say, he who comprehends the phenomenon attains access to its essence; and his assertion is quite accurate.

This "translation of terms" is possible because magic is, in fact, a fantastic, distorted transmutation of actual relations, relations unknown to the magician who nevertheless has an intuition of them in his own way, since the magician unwittingly relies on daily practice (which is actually based on the experience of the layman, though this experience is often turned into crazy statements). Practice shows us that all things possess something beyond their appearances: a butterfly, though it look like a leaf is none the less something other than a leaf. The magician was not a philosopher, but unconsciously and unwittingly he turned towards essence, the object of philosophy. Temporally, the act of the magician is prior to that of the first philosopher, but we are aware of the

fact that thousands of years elapsed before the act of this kind of abstractive awareness was accomplished and recognized.

Ours has not been an attempt to rationalize magic, but to draw attention to the actual relations among and within objects implied by magical statements, relationships which the magic vision distorts. We have tried to exhibit the possible service made in the formation of actual gnosiology by the magical grasp of these relations when this has been liberated from its magical shell and examined in a different manner.

No matter how much the representation through graphic or oral images stimulated the formation of categories, or suggested through symbols the marks, structure, and essential character of things; a major distinction still existed between the figurative and the conceptual. The graphic figure, contrasted with other elements of the sensible sphere to which it belongs, is homogeneous and simple, thus possessing a capacity towards a qualitatively different plane discriminating essence from the richness, the heterogeneity of phenomenality. This quality exhibits the catalytic, gnosiological function of the geometric figure.

There are facts of history that show that the "Chinese phenomenon" is less Chinese than would appear, due to the universal ontological and gnosiological relations upon which it is based. Universality aroused echoes and was implied by partly similar philosophies in different parts of the world; for instance, we can point to the Platonic view of geometric figures. In this case, the graphic is posterior to the categorial, the graphic being a mere auxiliary serving didactic and illustrative purposes. But the

very fact that such illustration is possible testifies to the qualities of graphic representations analyzed above.

We have praised the figural element; it is now time to expose its philosophical deficiencies. Philosophic language is categorial; it is speech inseparable from thinking. When the graphic figure aims at being more than the representation of a category (attempting to symbolize judgments and reasonings), more than a mere "categoriogram," it gets "blurred", equivocal, likely to be given various meanings. Secondly, its static character conflicts with the dynamism of essence. What is gained in suggestiveness and instantaneousness, it loses in precision and mobility, especially when one compares it to speech and thought, which are discursive.* The discursiveness of thought

* In this respect, the poetic metaphor is superior to the graphic one. To Piet Mondrian in the definite modality of non-figurative painting there is to be found "the expression of the real abstraction." This connection appears to exist when the composition endeavors to render plastically the intelligible by means other than objective ones. We have in mind those cases when the non-figurative painting embarks upon the road of abstraction; in such cases it addresses reason through an artistic emotion manifested by non-objective plastic works. It aims at suggesting to us a way towards abstractions which are either common or philosophical. It thus endeavors to play a catalytic role between concept and essence. It can take advantage of its instantaneousness, while it suffers little from such a limitation; since it does not claim logical precision, nor does it try to escape from a

is a kind of bondage, but this is its unique modality. Thinking expresses essential relations, relations considered in their complexity, their mutual action and dynamism, relations to be rendered discursively only. Due to their discursive nature, thinking and speech cannot be required to express everything at once; on the contrary, they are required to be inexhaustible, in harmony with the inexhaustiveness of essence.

Thus graphism, a contributor to the edifice of the history of philosophy, has remained, once the building arose, a decorative auxiliary.

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variegation of meaning, but includes all these. If it is unable to reproduce the dynamism of things, it is still capable of touching our fantasy, making up for its inaptitude by means of its own kind of dynamism. Poetry endeavors to communicate essence, not to clarify it; but, through this communication, it may be said to be our clarification when catharsis is understood as a kind of clarification. [From previous page.]

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Notes

1. Tcheou-pei-souan-king, trans. by E. Biot. Journal asiatique, Paris, 1841, T. XI, p. 602.
2. I. Banu, Sensuri universale si diferente specifice

în filozofia Orientului Antic. Bucarest, 1967, ed. Stiintifica.
3. Tchang Yen-yuan, Li Tai ming houa ki (The History of Painting in the History of the Dynasties, ch. 6), after N. Vendier Nicolas, in his "L'homme et le monde dans la peinture chinoise", in Rev. Phil. de la France et de l'etranger, No. 3, 1964, p. 303.
4. N. Vendier Nicolas, op. cit., p. 318.
5. Cf. J. Gernet, La vie quotitiénne en Chine, à la veille de l'invasion mongole. Paris, Hachette, 1959, p. 128.

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